Translation

PCT/EP2003/008681

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 97 574/yf/Al	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/008681	International filing date (*day/month/year*) 06 August 2003 (06.08.2003)	Priority date (*day/month/year*) 11 December 2002 (11.12.2002)
International Patent Classification (IPC) or national classification and IPC B01D 53/14, 5/00, F28B 5/00		
Applicant UHDE GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
16 June 2004 (16.06.2004)	07 March 2005 (07.03.2005)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/008681

I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-4, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☒ the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement under Article 19

pages _____, filed with the demand

pages 1, 2, filed with the letter of 16 November 2004 (16.11.2004)

☒ the drawings:

pages 1/1, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

V. **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1, 2	YES
	Claims		NO
Inventive step (IS)	Claims	1, 2	YES
	Claims		NO
Industrial applicability (IA)	Claims	1, 2	YES
	Claims		NO

2. Citations and explanations

1. DE-A-2702583 (document D1) discloses (see figure 1) a method for cooling rising vapours in a desorption column 9 using a condenser 10 in the form of an indirect heat exchanger mounted at the top of the desorption column and permeated by cooling water 11. The cooling water enters the condenser 10 at the bottom.

D1 does not explicitly state that the cooling water contains hydrogen sulphide. However, the cooling water in D1 consists of a wash solution that comes from a gas washer 2. The gas washer 2 treats waste gases, such as calcination gases (see page 9, fourth paragraph), that contain hydrogen sulphide, even if only in low concentrations. Hydrogen sulphide must therefore be present in the absorption solution of the gas washer 2, and hence also in the cooling water. Claim 1 does not specify a minimum value for the hydrogen sulphide concentration, and a person skilled in the art cannot be expected to work out from claim 1 what the minimum value for the H_2S concentration should be in order to solve the problem addressed by the present invention.

The distinguishing features of claim 1, which are not found in D1, are the fact that in the claimed method the condenser has vertical channels, and the fact that the cooling liquid exits at the top of the condenser as an overflow and flows into the desorption column.

The use of a conventional shell-and-tube condenser with vertical tubes through which the cooling water flows is already known. In a shell-and-tube condenser in which the cooling liquid enters at the bottom it should be obvious that the cooling liquid will exit as an overflow. Arrangements of this type are known from, for example, DE-A-4300131 (document D2; see figures 1 and 2a) and DE-A-3714016 (document D3; see feature 25 in the drawing). However, the feature whereby the cooling water overflow from the condenser is made to flow back into the desorption column does not seem to be obvious.

These distinguishing features and the combination thereof ensure that there is no carbonate precipitation from the heat-exchange surfaces cooled by the cooling water (see page 2, second paragraph).

The method according to claim 1 appears to involve an inventive step (PCT Article 33(3)).

2. The arguments in point 1 above should also apply to the device according to claim 2 (PCT Article 33(3)).

Further observations

1. The description fails to cite any prior art documents (PCT Article 5.1(a)(ii)).

2. The independent claims are not presented in the two-part form (PCT Rule 6.3(b)).